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WAR FOOD ADMINISTRATION
1108 Post Office, Chicago, Illinois
Grain Products Branch, Office of Distribution
and Extension Service, Cooperating

ESTIMATE OF SMUTTY WHEAT, MIXED WHEAT AND DOCKAGE LOSSES
1937 to 1941 Crops

Source of Data

The first step in any program for crop improvement is an analysis of the defects in the crop, as produced and marketed. Information for such an analysis for the grain crops is available in the records of grain inspections which are compiled by the War Food Administration in the enforcement of the United States Grain Standards Act.

About one and one-third million inspections are made annually at terminal grain markets, and from these inspections the grading of the grain crops by numerical grades is secured. The condition of the grain in regard to smut, weevil, garlic, high moisture, mixed classes, and other factors is recorded. For certain defects such as rye, cockle, class mixtures in wheat, and blighted barley, the shipping points of the grain are determined by Federal grain supervisors. The shipping point data from various markets are assembled to show the county origin of the defective grain, and these records are furnished to crop improvement workers.

In addition to the one and one-third million inspections, Federal grain supervisors sample almost 200 thousand lots of inspected grain annually, or about 15 percent of the total inspection lots. The analysis of these supervision samples is completed in considerable detail, and forms the basis for study of how the grain standards are functioning. From the supervisors' samples data are available on all the grading factors of test weight, moisture, damaged, foreign material and dockage. These data are compiled for certain key markets and for the entire United States. Because of the volume of information it is impractical to publish all of it, but the material is available for study by those who have a need for the information.

Weed Control Programs

In considering the weed control programs, the quantity of dockage in market grain receipts is significant. Dockage in wheat, rye and barley may be defined as the foreign material (including weed seeds) which can be removed readily by appropriate sieves. Dockage in flaxseed, however, includes all foreign material in the sample. In the case of grain sorghums and soybeans, the dockage

consists only of the material that will pass through a prescribed sieve. The materials found in Hard Red Spring wheat, Durum wheat, rye, flaxseed and soybean dockage have been studied by various investigators. They all report weed seeds by far the largest component of dockage in these grains. The dockage in grain sorghums is usually considered to be sand, but often small weed seeds are found in grain sorghum dockage. Those who wish to study local dockage components can secure dockage separations from the grain dealers at country elevators.

Loss Estimate Tables

The tables which follow contain estimates of market discounts due to dockage in flaxseed, wheat, rye, barley and grain sorghums, and the market discounts for smutty and mixed wheats. Smutty and mixed wheat losses are based on the inspection of all market receipts. The dockage losses are based on the dockage found by Federal grain supervisors, and this percentage is applied to the total inspected market receipts. The dockage loss is estimated as the market value of the grain which it replaces. The market losses for smutty wheat are estimated at 3 cents per bushel and the loss applied to the entire production at 5 cents per bushel, allowing 2 cents for production loss and 3 cents for market losses. The mixed wheat discount is estimated at 2 cents per bushel for both the market receipts and for the entire mixed wheat production.

In the last two tables the losses are applied to the entire production as well as to that part of the crop which is inspected at terminals. The final estimate of 12.7 million dollars annual loss is by no means an estimate of annual weed losses. One State alone estimated their annual weed losses at 145 million dollars. The estimated losses given in these tables are marketing losses and apply to the grain as marketed. The additional weed content of the standing grain is not a part of these estimates. While absolute accuracy is not claimed for these loss figures, it is believed they are close and conservative enough to indicate their importance.

During recent years most States have made good progress in smut control and in the elimination of mixed wheat. It is hoped that marketing and production problems in the areas in which greatest losses now occur will continue to be studied in detail by Extension and crop improvement workers, with a view of reducing the remaining losses as much as possible by economically practical methods.

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DOCKAGE LOSSES IN WHEAT

Hard Red Spring

Crop Year	Production: (Million Bu.)	SUPERVISED MARKET RECEIPTS:		INSPECTED MARKET RECEIPTS		
		Average Assessed Dockage	Percent of Rect.: with assessed dockage	Total Inspected	Dockage	Assessed (Million dollars)
		(%)	(%)	(Million Bu.)	(Million Bu.)	
1937	101.0	2.6	78.6	76.9	1.6	2.0
1938	154.7	1.9	63.4	127.8	1.5	1.2
1939	188.0	2.3	76.3	135.1	2.4	2.3
1940	159.7	1.7	62.3	128.4	1.4	1.2
1941	207.5	1.5	58.0	173.3	1.5	1.7
5-Yr. Total	704.8			641.5	8.4	8.4

Durum

1937	28.7	3.8	90.6	19.8	.7	.1
1938	41.0	2.0	79.9	26.5	.4	.3
1939	33.1	2.2	77.8	22.7	.4	.4
1940	34.3	2.5	76.5	23.5	.5	.4
1941	42.7	1.8	63.2	29.9	.3	.4
5-Yr. Total	180.0			122.5	2.3	1.6

Hard Red Winter

1937	381.7	1.3	17.7	379.2	.9	1.0
1938	396.0	1.4	13.3	440.5	.9	.6
1939	319.9	1.4	14.1	288.8	.6	.4
1940	329.8	1.4	21.2	330.5	1.0	.8
1941	395.0	1.4	22.2	319.4	1.0	1.1
5-Yr. Total	1,822.4			1,758.3	4.2	3.9

(Dockage Losses in Wheat)

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Soft Red Winter

Crop Year	Production: (Million Bu.)	SUPERVISED MARKET RECEIPTS		INSPECTED MARKET RECEIPTS		
		Average Assessed Dockage (%)	Percent of Repts. with assessed dockage (%)	Total Inspected (Million Bu.)	Dockage (Million Bu.)	Assessed (Million Dollars)
1937	249.8	2.1	17.8	109.3	.4	.5
1938	226.1	1.8	13.4	85.4	.3	.2
1939	193.1	1.6	9.4	77.2	.1	.1
1940	206.3	1.8	13.1	77.1	.2	.1
1941	209.4	1.6	6.6	63.7	.1	.1
5-Yr. Total	1,084.7			412.8	1.0	1.0

White

1937	122.8	1.5	32.6	67.2	.3	.3
1938	102.0	1.5	33.2	71.0	.3	.2
1939	77.0	1.3	26.4	53.6	.2	.1
1940	83.1	1.4	38.9	59.4	.3	.2
1941	88.6	1.3	25.5	46.6	.2	.1
5-Yr. Total	463.5			296.8	1.3	1.0

ALL WHEAT - FIVE YEAR DOCKAGE LOSSES
1937-1941 CROPS

Class	Production: (Million Bu.)	Dockage Assessed (Million Bu.)	(Million Dollars)	Ratio of inspec- ted market receipts to entire Production (%)	Dockage losses - entire production (Million Dollars)
Hard Red Spring:	704.8	8.3	8.4	91.0	9.2
Durum	180.0	2.3	1.6	68.0	2.3
Hard Red Winter:	1,822.4	4.2	3.8	96.0	4.0
Soft Red Winter:	1,084.7	1.0	1.0	38.0	2.5
White	463.5	1.3	1.0	64.0	1.7
Total 1937-41	4,291.4	18.2	16.9	80.0	21.0

FIVE YEAR LOSSES - DOCKAGE, MIXED AND SMUTTY WHEAT
1937-1941 CROPS

Grain	Production: (Million Bu.)	Inspected Market Receipts (Million Bu.)	Kind of Loss	Market Losses (Mil. Bu.)	Ratio of Insp. Receipts to pro- duction (%)	Loss if applied to entire production (Million Dollars)
Flaxseed	97.9	100.8	Dockage	12.8	23.7	23.0
Wheat	4,291.4	3,429.5	"	18.2	16.9	21.0
Barley-Class I (Eastern)	1,085.9	288.8	"	2.9	1.8	6.7
Barley-Class III (Western)	334.4	26.9	"	.1	.1	.7
Rye	228.8	148.1	"	1.2	.7	1.1
Grain Sorghums	385.3	47.7	"	.1	.1	.5
Smuttery Wheat			Wheat Smut	102.8	3.1	6.2
Mixed Wheat			Mixed	165.3	3.3	4.1
Classes						
1937-1941 (Total 5-year loss				49.6:		63.3
(Average annual loss				9.9:		12.7

